CLAIMS

We claim:

1. An Ethernet switch node providing power over Ethernet functionality for use in a power pooling system comprising at least one pooling controller, the Ethernet switch node providing power over Ethernet functionality comprising:

a DC power source;

an electrical load connected to said DC power source;

a power sharing circuit responsive to an output of the at least one pooling controller, said power sharing circuit being operative to govern electrical power provided by said DC power source; and

a DC electrical power connection to said DC power source and said electrical load, permitting external DC electrical power flow to and from the DC electrical power consuming and providing entity,

wherein the Ethernet switch node providing power over Ethernet functionality has at least a first operative mode in which said DC power source may provide more electrical power than is consumed by said electrical load and a second operative mode in which said electrical load may consume more electrical power than is provided by said DC power source.

2. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said DC power source receives AC mains power and converts said AC mains power to DC electrical power.

3. An Ethernet switch node providing power over Ethernet functionality according to claim 1, further comprising a power sharing circuit controller associated with said power sharing circuit, said power sharing circuit being responsive to an output of said power sharing circuit controller to govern electrical power provided by said DC power source.

4. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said DC power source comprises a power supply

controller, and wherein said at least one power sharing circuit is operable to modify the operation of said power supply controller.

5. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said power sharing circuit is operable to transmit to at least one pooling controller of the power pooling system information relating to DC electrical power needs and DC electrical power providing capabilities of said Ethernet switch node providing power over Ethernet functionality.

6. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said power sharing circuit is operable to transmit to at least one pooling controller of the power pooling system information relating to at least one of power needs of said electrical load, power providing capabilities of said DC power source, current priority of said electrical load and current temperature of said Ethernet switch node providing power over Ethernet functionality.

7. An Ethernet switch node providing power over Ethernet functionality according to claim 1, further comprising a temperature sensor having a temperature indicating output.

8. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said power sharing circuit comprises an associated temperature sensor having a temperature indicating output, said power sharing circuit being operable to communicate information regarding said temperature indicating output to at least one pooling controller of the power pooling system.

9. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said electrical load is operable to communicate power needs to at least one of said power sharing circuit and at least one pooling controller of the power pooling system.

10. An Ethernet switch node providing power over Ethernet functionality according to claim 1, wherein said node is operable in accordance with the IEEE 802.af standard.

11. A method of DC power pooling for an Ethernet switch node having power over Ethernet functionality in a power pooling system comprising at least one pooling controller, the method comprising:

providing a DC power source;

providing an electrical load associated with said DC power source;

connecting said DC power source to said electrical load;

governing the electrical power provided by said DC power source; and

providing a DC electrical power connection to said DC power source and said electrical load, thereby permitting external DC electrical power flow to and from the DC electrical power consuming and providing entity,

wherein the Ethernet switch node having power over Ethernet functionality has at least a first operative mode in which it may provide more electrical power than it consumes and a second operative mode in which it may consume more electrical power than it provides.

12. A method of DC power pooling according to claim 11, further comprising:

receiving AC mains power at each of said plurality of DC electrical power consuming and providing entities;

converting said AC mains power to DC power; and

providing said DC power to said electrical load.

13. A method of DC power pooling according to claim 11, further comprising:

providing at least one power sharing circuit associated with said DC power source, and wherein said governing is accomplished by said at least one power sharing circuit.

14. A method of DC power pooling according to claim 11, wherein said at least one DC electrical power source comprises a power supply controller, and wherein said governing is accomplished by modifying the operation of said power supply controller.

15. A method of DC power pooling according to claim 11, further comprising:

transmitting to at least one pooling controller of the power pooling system information relating to DC electrical power needs and DC electrical power providing capabilities of said Ethernet switch node having power over Ethernet functionality.

16. A method of DC power pooling according to claim 11, further comprising:

transmitting to at least one pooling controller of the power pooling system information relating to at least one of power needs of said electrical load, power providing capabilities of said DC power source, temperature of said DC power source and percentage of capability being utilized by said DC power source.

17. A method of DC power pooling according to claim 11, further comprising:

sensing a temperature of said Ethernet switch having power over Ethernet functionality; and

communicating information relating to said sensed temperature to at least one pooling controller of the power pooling system.

18. A method of DC power pooling according to claim 11, further comprising:

sensing a temperature of said DC power source; and

communicating information relating to said sensed temperature to at least one pooling controller of the power pooling system.

19. A method of DC power pooling according to claim 11, further comprising:

communicating information relating to the percentage of available power being supplied by said DC power source to at least one pooling controller of the power pooling system.

20. A method of DC power pooling according to claim 11, further comprising;

transmitting information relating to the power needs of said electrical load to at least one pooling controller of the power pooling system.